

CLAIMS

What is claimed is:

1. A method comprising:

receiving one or more definitional statements expressed with language elements

5 of a programming language;

determining if said one or more definitional statements include an operator with a first operand representing a data representation language value and a second operand representing a conditional expression; and

processing said operator to iteratively identify one or more elements selected

from said data representation language value for which a test condition stipulated by said conditional expression is satisfied.

2. The method of claim 1, wherein said operator is a filtering predicate operator

indicated by a period (".") followed by a set of parentheses "()", wherein the

parentheses contain at least said conditional expression.

3. The method of claim 1, wherein said data representation language comprises

XML and said programming language comprises ECMAScript.

20 4. The method of claim 1, wherein said one or more definitional statements include
a mapping definition to map selected elements of said data representation language to
selected objects of said programming language or to map selected objects of said
programming language to selected elements of said data representation language.

5. An article of manufacture comprising:
- a storage medium having stored therein a plurality of programming instructions designed to program an apparatus, which when executed enable the apparatus to
- receive one or more definitional statements expressed with language elements of a programming language;
- determine if said one or more definitional statements include an operator with a first operand representing a data representation language value and a second operand representing a conditional expression; and
- process said operator to iteratively identify one or more elements selected from said data representation language value for which a test condition stipulated by said conditional expression is satisfied.
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6. The article of manufacture of claim 5, wherein said operator is a filtering predicate operator indicated by a period (".") followed by a set of parentheses "()", wherein the parentheses contain at least said conditional expression.
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7. The article of manufacture of claim 5, wherein said data representation language comprises XML and said programming language comprises ECMAScript.
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8. The article of manufacture of claim 5, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map

selected objects of said programming language to selected elements of said data representation language.

9. A method comprising:

5 receiving one or more definitional statements expressed with language elements of a programming language;

10 determining whether the one or more definitional statements comprises an expression representing a data representation language value and including one or more named child elements embedded within an unnamed parent element; and

15 processing the expression including the unnamed parent element as an XML document fragment, if it is determined that the one or more definitional statements comprises an expression including one or more named child elements embedded within an unnamed parent element.

20 10. The method of claim 9, wherein operations between the unnamed parent element and the one or more named child elements affect only the child elements and not the parent element.

20 11. The method of claim 9, wherein said data representation language comprises XML and said programming language comprises ECMAScript.

12. The method of claim 9, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

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13. An article of manufacture comprising:

a storage medium having stored therein a plurality of programming instructions designed to program an apparatus, which when executed enable the apparatus to:

receive one or more definitional statements expressed with language elements of a programming language;

determine whether the one or more definitional statements comprises an expression representing a data representation language value and including one or more named child elements embedded within an unnamed parent element;

and

process the expression including the unnamed parent element as an XML document fragment if it is determined that the one or more definitional statements comprises an expression including one or more named child elements embedded within an unnamed parent element.

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14. The article of manufacture of claim 13, wherein operations between the unnamed parent element and the one or more named child elements affect only the child elements and not the parent element.

15. The article of manufacture of claim 13, wherein said data representation language comprises XML and said programming language comprises ECMAScript.

5 16. The article of manufacture of claim 13, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

10 17. A method comprising:
receiving one or more definitional statements expressed with language elements
of a programming language;

15 determining whether the one or more definitional statements includes a statement designed to import a predefined data type description describing a class of objects associated with said data representation language;

20 determining whether the one or more definitional statements associate one or more data representation language values with said data type description;

determining whether the one or more definitional statements include an operator, wherein said one or more data representation language values are operands of said operator;

determining whether said operator will result in one or more of said data representation language values that do not conform with constraints specified by said data type description; and

generating one or more error messages identifying said operator as generating

- 5 results that do not conform with constraints specified by said data type.

18. The method of claim 17, wherein said data representation language comprises XML and said programming language comprises ECMAScript.

19. The method of claim 18, wherein said predefined data type description comprises one of an XML Schema and a data type description (DTD).

20. The method of claim 17, further comprising:

validating whether the one or more definitional statements are structured in conformance with one or more constraints associated with said predefined data type description.

21. The method of claim 17, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to
20 selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

22. An article of manufacture comprising:

a storage medium having stored therein a plurality of programming instructions designed to program an apparatus, which when executed enable the apparatus to:

- 5 receive one or more definitional statements expressed with language elements of a programming language;
- 10 determine whether the one or more definitional statements includes a statement designed to import a predefined data type description describing a class of objects associated with said data representation language;
- 15 determine whether the one or more definitional statements associate one or more data representation language values with said data type description;
- 20 determine whether the one or more definitional statements include an operator, wherein said one or more data representation language values are operands of said operator;
- 25 determine whether said operator will result in one or more of said data representation language values that do not conform with constraints specified by said data type description; and
- 30 generate one or more error messages identifying said operator as generating results that do not conform with constraints specified by said data type.

23. The article of manufacture of claim 22, wherein said data representation language comprises XML and said programming language comprises ECMAScript.

24. The article of manufacture of claim 23, wherein said predefined data type description comprises one of an XML Schema and a data type description (DTD).

5 25. The article of manufacture of claim 22, wherein said plurality of programming instructions further comprise instructions to:

validate whether the one or more definitional statements are structured in conformance with one or more constraints associated with said predefined data structure.

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26. The article of manufacture of claim 22, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

27. A method comprising:

receiving one or more definitional statements expressed with language elements of a programming language;

20 determining if said one or more definitional statements include an expression representing a data representation language value;

determining whether the one or more definitional statements comprises an expression including an operator having a left operand and a right operand, wherein said left operand comprises one of an IDREF and IDREFS attribute; and

processing the expression to identify zero or more elements containing an id

5 attribute whose value is equivalent to that of said IDREF or IDREFS attributes.

28. The method of claim 27, wherein said data representation language comprises XML and said programming language comprises ECMAScript.

10 29. The method of claim 28, wherein at least one of said IDREF and IDREFS attributes are indicated by a declaration in at least one of an XML Schema and a Document Type Declaration.

15 30. The method of claim 27, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

31. An article of manufacture comprising:

20 a storage medium having stored therein a plurality of programming instructions designed to program an apparatus, which when executed enable the apparatus to:
receive one or more definitional statements expressed with language
elements of a programming language;

determine if said one or more definitional statements include an expression representing a data representation language value;

determine whether the one or more definitional statements comprises an expression including a first operator having a left operand and a right operand,

5 wherein said left operand comprises one of an IDREF and IDREFS attribute; and

process the expression to identify one or more elements containing an id attribute whose value is equivalent to that of said IDREF or IDREFS attributes.

- 10 32. The article of manufacture of claim 31, wherein said data representation language comprises XML and said programming language comprises ECMAScript.
- 15 33. The article of manufacture of claim 32, wherein at least one of said IDREF and IDREFS attributes are indicated by a declaration in at least one of an XML Schema and a Document Type Declaration.
- 20 34. The article of manufacture of claim 31, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

35. A method comprising:

receiving one or more definitional statements expressed with language elements
of a first programming language;

5 determining whether the one or more definitional statements include a statement
designed to indicate the logic of a function is expressed using a second programming
language from within said first programming language; and

processing the one or more definitional statements to pass at least a name and
body of said function to be evaluated in association with said second programming
language.

10 36. The method of claim 35, wherein determining whether the one or more
definitional statements includes a statement designed to indicate the logic of a function
is expressed using a second programming language comprises:

15 determining whether the one or more definitional statements includes a language
token associated with said second programming language; and

accessing an external parser and expression evaluator associated with said
second programming language if the one or more definitional statements includes said
language token.

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37. The method of claim 35, wherein said one or more definitional statements include
a mapping definition to map selected elements of said data representation language to

selected objects of said programming language or to map selected objects of said programming language to selected elements of said data representation language.

38. An article of manufacture comprising:

5 a storage medium having stored therein a plurality of programming instructions

designed to program an apparatus, which when executed enable the apparatus to:

receive one or more definitional statements expressed with language elements of a first programming language;

10 determine whether the one or more definitional statements include a statement designed to indicate the logic of a function is expressed using a second programming language from within said first programming language; and process the one or more definitional statements to pass at least the a name and body of said function to be evaluated in association with said second programming language.

39. The article of manufacture of claim 38, wherein determining whether the one or more definitional statements includes a statement designed to indicate the logic of a function is expressed using a second programming language comprises:

name and body of said function to be evaluated in association with said second programming language.

20 token associated with said second programming language; and

accessing an external parser and expression evaluator associated with said second programming language if the one or more definitional statements includes said language token.

40. The article of manufacture of claim 38, wherein said one or more definitional statements include a mapping definition to map selected elements of said data representation language to selected objects of said programming language or to map
5 selected objects of said programming language to selected elements of said data representation language.

41. A method comprising:

10 receiving a mapping definition mapping between selected elements of an XML data structure and one or more ECMAScript objects;
determining whether the mapping definition comprises one or more definitional statements expressed with language elements of said one or more ECMAScript objects;
determining whether the one or more definitional statements includes an operator with a first operand representing a data representation language value and a second operand representing a conditional expression, if the mapping definition does comprise one or more definitional statements expressed with language elements of said one or more ECMAScript objects; and
processing said operator to iteratively identify one or more elements selected from said data representation language value for which a test condition stipulated by the
20 conditional expression is satisfied.

42. A method comprising:

receiving a mapping definition mapping between selected elements of an XML

data structure and one or more ECMAScript objects;

5 determining whether the mapping definition comprises one or more definitional statements expressed with language elements of said one or more ECMAScript objects;

determining whether the one or more definitional statements comprises an expression including one or more elements embedded within an unnamed parent element, if the mapping definition comprises one or more definitional statements expressed with language elements of said one or more ECMAScript objects; and

processing the expression including the unnamed parent element as an XML document fragment if it is determined that the one or more definitional statements comprises an expression including one or more elements embedded within an unnamed parent element.

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43. A method comprising:

receiving a mapping definition mapping between selected elements of an XML data structure and one or more ECMAScript objects;

20 determining whether the mapping definition comprises one or more definitional statements expressed with data representation oriented language elements of said one or more ECMAScript objects;

determining whether the one or more definitional statements includes a statement designed to import a predefined data type description describing a class of

objects associated with said data representation language, if the mapping definition does in fact comprise one or more definitional statements expressed with language elements of said one or more ECMAScript objects;

determining whether the one or more definitional statements associate one or

5 more data representation language values with said data type description;

determining whether the one or more definitional statements include an operator, wherein said one or more data representation language values are operands of said operator;

determining whether said operator will result in one or more of said data representation language values that do not conform with constraints specified by said data type description; and

generating one or more error messages identifying said operator as generating results that do not conform with constraints specified by said data type.

10 44. A method comprising:

receiving a mapping definition mapping between selected elements of an XML data structure and selected objects of one or more ECMAScript objects;

determining whether the mapping definition comprises one or more definitional statements expressed with language elements of said one or more ECMAScript objects;

20 determining whether the one or more definitional statements comprises an expression including a operator having a left operand and a right operand, wherein said left operand comprises one of an IDREF and IDREFS attribute, if the mapping definition

does comprise one or more definitional statements expressed with language elements of said one or more ECMAScript objects; and

processing the expression to identify zero or more of said elements containing an id attribute whose value is equivalent to that of said IDREF and IDREFS attributes.

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45. A method comprising:

receiving a mapping definition mapping between selected elements of an XML data structure and one or more ECMAScript objects;

determining whether the mapping definition comprises one or more definitional statements expressed with data representation oriented language elements of said one or more ECMAScript objects;

determining whether the one or more definitional statements includes a statement designed to indicate the logic of a function is expressed using a programming language from within said one or more ECMAScript objects, if the mapping definition does in fact comprise one or more definitional statements expressed with language elements of said one or more ECMAScript objects; and

processing the one or more definitional statements to pass at least a name and body of said function to be evaluated in association with said one or more ECMAScript objects.